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Air Quality Report

Lovers Canyon Project

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Siskiyou County, California

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Air Quality Report

Introduction

The purpose of this report is to analyze the effects of the project and its alternatives on air quality including ambient air quality standards. The analysis will also include discussion on haze impacts on Wilderness values associated with good air quality.

Ambient Air Quality Standards

Siskiyou County is identified as attainment for ozone, carbon monoxide, sulfur oxides, lead, respirable particulate matter and fine particulate matter (criteria pollutants) for both state and federal standards. Under the Conformity Rule, there is no further state or federal regulation for project activities that generate criteria emissions and does not need to be analyzed further.

Regional Haze Rule

The Regional Haze Rule (1999) requires a Regional Haze Plan for Class 1 designated airsheds. These include National Parks and Wilderness established before 1977. Human-related sources of haze include industry, motor vehicles, agricultural and forestry burning, and dust from disturbed soils. The primary concern is the reduction of visibility in wilderness areas.

Greenhouse Gas Emissions

Prescribed burning activities release greenhouse gases including carbon dioxide and methane into the air which can contribute to climate change. Currently there are no thresholds for greenhouse gas emissions for prescribed burning activities. Emissions of greenhouse gases are commonly expressed in a common metric which is the carbon dioxide equivalent. Some greenhouse gases are more potent than others and this metric allows for the direct comparison of impacts between different activities with different ratios of greenhouse gases emissions.

Methodology

Analysis Indicators

- Compliance with the Regional Haze Rule
 - Estimated days of visibility impacted in the Wilderness
 - Likelihood of preventing progress of the California Regional Haze Plan.
- Estimated Greenhouse Gas Emission

Measures

Regional Haze Rule

The Regional Haze Rule requires that states make reasonable progress towards achieving natural visibility conditions in Class 1 areas. The reasonable progress means that the worst haze days get less hazy *and* that visibility does not deteriorate on the best days, when compared with the baseline period of 2000 to 2004 (California Air Resource Board, 2009). Federal agencies should not prevent this progress through management activities. The analysis will include an evaluation of the estimated residence time of smoke from project activities and its impact to the worst days haze to determine compliance with the Regional Haze Rule.

Greenhouse Gas Emissions

The average greenhouse gas emissions from prescribed fire are also estimated using the First Order Fire Effects Model. The modeling is based on a Douglas-fir – tanoak - madrone forest under moderate weather conditions with a natural or activity fuel load. The defaults of the model in this mode are used for the model runs. The First Order Fire Effects Model is recognized by the Forest Service Pacific Southwest Region as being the most current and accurate analysis tool available for emissions prediction (Reinhardt et al. 1997). It is based on extensive research in western forest ecosystems.

Spatial and Temporal Bounding of Analysis Area

It is difficult to determine the spatial analysis area for effects to air quality due to the mobility of air. For this project, the spatial boundary includes the project area and the Marble Mountain Class I airshed under the Clean Air Act. Temporally, emissions from mobile sources such as logging trucks and tractors, as well as from prescribed burning, are transient and the impacts are short-lived and the air quality regulations are in terms of 1-year emissions. In light of this, the temporal analyses are on an annual basis and this is considered short-term. Impacts are considered long-term if they persist for more than a year. The cumulative effects of the emission will be addressed at the project scale including the Marble Mountain Wilderness.

Affected Environment

According to the California Air Resources Board website (www.arb.ca.gov) Siskiyou County is in attainment for all criteria air pollutants.

The project area is primarily forested federally managed lands with no substantial human-caused emission sources within the area other than emission and fugitive dust from logging and recreation. Other emission contributions will be smoke and haze from seasonal wildland and prescribed fires from both within and outside the county. According to the California Air Resources Board (<http://www.arb.ca.gov/app/emsmv/emssumcat.php>) the nitrogen oxide emissions are primarily from heavy-duty diesel trucks (such as from the I-5 corridor).

The project is adjacent to The Marble Mountain Wilderness which is designated as a Class 1 wilderness by the Clean Air Act. The haze species concentrations are measured as part of the IMPROVE (Interagency Monitoring of Protected Visual Environments) monitoring network deployed throughout the United States. The 24 days with the worst visibility are averaged each year and used to determine the worst days' visibility. The visibility conditions for Marble Mountain Wilderness are currently monitored by an IMPROVE monitor in the Trinity Alps. The worst air quality days are dominated by organic aerosols (particulate matter associated that cause a haze in the air). Organic aerosols peak during the summer months and are strongly correlated with the incidence of wildfires (California Air Resource Board, 2009). The amount of light extinction affects visibility or the clarity of objects viewed at a distance by the human eye this is measured in "deciviews" which are the amount of obstruction the haze in the air causes; higher numbers mean you cannot see as far into the distance.

Environmental Consequences

Alternative 1

Direct Effects and Indirect Effects

Under this alternative no management action will be taken that will emit greenhouse gases or impact the visibility in the Marble Mountain Wilderness.

Cumulative Effects

There are no direct or indirect effects for this alternative and therefore no cumulative effects.

Effects Common to Alternatives 2 and 3

The activities that are proposed that have the potential to affect air resources are the same under alternative 2 and 3 and these alternatives were analyzed together in this section.

Direct and Indirect Effects

The prescribed fire proposed in the project area will occur over a few days of any given year. Burning will likely occur in the spring or fall, outside of the wildfire season. Since the wildfire season is the time of the year when haze is at its worse, the project won't impact visibility on the worst haze days. The likelihood that prescribed burning on a few days any given year will affect the average visibility on the best days over an entire year is small. The likelihood of preventing the progress of the Regional Haze Plan is very low for this alternative.

The greenhouse gas analysis uses the same assumptions as the Ambient Air Quality Standards analysis. An estimated 0.26 metric tons per acre and 31 metric tons per acre of emissions of methane and carbon dioxide respectively from prescribed fire in activity fuels will be created. One metric ton of methane is equivalent to 21 metric tons of carbon dioxide equivalent. Therefore, prescribed fire on one acre of activity fuels will emit about 5.5 metric tons per acre of carbon dioxide equivalent. This alternative proposes prescribed fire on about 2,223 acres of activity fuels. Therefore, the greenhouse gas emissions will be about 12,226.5 metric tons of carbon dioxide equivalent.

It is not currently feasible to quantify the indirect effects of individual or multiple projects on global climate change and, therefore, determining significant effects of those projects or project alternatives on global climate change cannot be made at any scale (USDA 2009). Because greenhouse gases mix readily into the global pool, it is not currently possible to ascertain the indirect effects of emissions from single or multiple sources (projects). Also, because the large majority of Forest Service projects are extremely small in the global atmospheric carbon dioxide context, it is not presently possible to conduct quantitative analysis of actual climate change effects based on individual or multiple projects (USDA 2009).

Cumulative Effects

Adding the effects on air quality of alternative 2 to effects of ongoing or reasonably foreseeable future actions in the project area is expected to provide minimal cumulative effects with the oversight of the Siskiyou County Air Pollution Control District. Criteria pollutant and greenhouse gas emissions will degrade air quality cumulatively with activities occurring in the surrounding area. However, these emissions are expected to be minimal and able to disperse

readily. Compliance with Burn Day, Marginal Burn Day, and No Burn Day designation, and coordination with and permitting from the Siskiyou County Air Pollution Control District, will minimize cumulative effects of prescribed fire.

As GHG emissions are integrated across the global atmosphere, it is not possible to determine the cumulative impact on global climate from emissions associated with any number of particular projects. Nor is it expected that such disclosure will provide a practical or meaningful effects analysis for project decision (USDA 2009).

Summary of Effects

Table 1: Comparison of effects to air quality for all alternatives.

Indicator	Alternative 1	Alternative 2 or 3
Compliance with Regional Haze Rule	Alternative 1 will have no effect on visibility in the Marble Mountain Wilderness and will not prevent progress of the California Regional Haze Plan.	Alternative 2 or 3 will have no effect on visibility in the Marble Mountain Wilderness and has a very low probability of preventing the progress of the California Regional Haze Plan.
Greenhouse Gas Emissions	There are no greenhouse gas emissions as a result of Alternative 1.	There will be an estimated 12,226.5 metric tons of gas emissions as a result of Alternative 2 or 3.

Compliance with law, regulation, policy, and the Forest Plan

The project is not anticipated to result in an adverse impact to air quality because compliance with Siskiyou County Air Pollution Control District burn day designations and permits has resulted in continued attainment status designations for both federal and state standards. The project meets requirements for the General Conformity Rule and the Regional Haze Rule under the Clean Air Act.

Literature Cited

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